

REMARKS

This application has been carefully reviewed in light of the Office Action dated May 3, 2004. Claims 32, 34, 36-38, 40-43, 48, 50-51, and 58-61 have been amended. Claim 62 has been canceled. Claims 32, 34, 36-48, 50-51, and 58-61 are now pending. Applicants reserve the right to pursue the original claims and other claims in this and other applications. Applicants respectfully request reconsideration of the above-referenced application in light of the amendments and following remarks.

Claims 32, 34, 36-38, and 58-61 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Blatchford. The rejection is respectfully traversed.

Blatchford does not teach a first and second anti-reflective coating layer. Blatchford merely discloses an anti-reflection coating 17 formed between substrate 10 and photoresist layer 16 (FIG. 1). The anti-reflection coating 17 comprises three separate layers 13-15 (FIG. 1). In the Office Action dated October 17, 2003, and relied upon for the discussion of the § 102(e) rejection in the present Office Action, the Examiner acknowledged that "[t]he antireflection coating 17 comprises three layers 13-15 of silicon containing oxide." (Office Action, pg. 3).

As such, Blatchford does not disclose an integrated circuit comprising "a reflective layer having a reflective surface; a first anti-reflective coating layer . . . a second anti-reflective coating layer formed over and in contact with said first anti-reflective coating layer . . . [and] the first and second anti-reflective coating layers are chosen such that the amplitudes and phase differences of all sources of reflected radiation . . . substantially mutually cancel when combined," as recited in claim 32 (emphasis added).

Blatchford also does not disclose an integrated circuit comprising “a reflective layer having a reflective surface; a first silicon dioxide layer formed over the reflective layer; a first anti-reflective coating layer formed over and in contact with the first silicon dioxide layer . . . a second anti-reflective coating layer in contact with said first anti-reflective coating layer . . . [and] a second silicon dioxide layer formed over the second anti-reflective coating layer,” as recited in claim 60 (emphasis added). In Blatchford’s FIG. 1, label 19 is a fourth oxynitride layer, label 16 is a photoresist layer, and label 18 is a metal layer. Blatchford’s FIG. 1 does not teach or suggest any silicon dioxide layers, much less Applicants’ claimed first and second silicon dioxide layers. Further, Blatchford’s first anti-reflection layer 13 is formed on metal layer 18 and not on a first silicon dioxide layer as Applicants claim.

Still further, Blatchford does not teach an integrated circuit comprising “a reflective layer having a reflective surface; and an etch-stop layer comprising: a first anti-reflective coating layer formed over the reflective surface . . . [and] a second anti-reflective coating layer in contact with said first anti-reflective coating layer,” as recited in claim 61 (emphasis added). Blatchford does not teach an etch-stop layer, much less an etch-stop layer that comprises a first anti-reflective coating layer and a second anti-reflective coating layer as recited in claim 61.

Accordingly, claims 32 and 59-61 are not anticipated by Blatchford for the reasons provided above. Claims 34, 36-38, and 58-59 depend from claim 32 and should be similarly allowable along with claim 32 for at least the reasons provided above. Withdrawal of the § 102(e) rejection for claims 32, 34, 36-38, and 58-61 is respectfully solicited.

Claim 39 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Blatchford. The rejection is respectfully traversed. Claim 39 depends from claim 32 and is allowable along with claim 32 for at least the reasons provided above. Specifically, Blatchford discloses an anti-reflection coating 17 comprising three separate layers 13-15. Blatchford does not teach or suggest a first anti-reflective coating layer and a second anti-reflective coating layer as recited in claim 32.

In the Office Action dated October 17, 2003, and relied upon for the discussion of the § 103(a) rejection in the present Office Action, the Examiner also acknowledged that Blatchford “does not disclose that the first index of refraction is approximately 2.1.” (Office Action, pg. 4). The Examiner further stated that it would have been within the ordinary skill of one in the art to determine the optimal index of refraction for the first antireflection layer in Blatchford. Applicants respectfully disagree.

Applicants specification teaches that “[d]etermining the proper thicknesses, indices of refraction and absorption of layers 12 and 14 is not simple . . . Therefore, balancing the amplitudes as well as the phase differences is not trivial, especially when one considers that the index of refraction and absorption values are not independent.” (Applicants’ specification, pg. 9, line 11 through pg. 10, line 9). Accordingly, it is not obvious to determine Applicants’ claimed first index of refraction of 2.1, especially when Blatchford does not teach or suggest an index of refraction for the first anti-reflection layer 13.

Moreover, the Office Action fails to establish a *prima facie* case of obviousness. Courts have generally recognized that a showing of a *prima facie* case of obviousness necessitates three requirements: (i) some suggestion or motivation, either in the references themselves or in the knowledge of a person of ordinary skill in the art, to

modify the reference or combine the reference teachings; (ii) a reasonable expectation of success; and (iii) the prior art references must teach or suggest all claim limitations. See e.g., In re Dembiczak, 175 F.3d 994 (Fed. Cir. 1999); In re Rouffet, 149 F.3d 1350, 1355 (Fed. Cir. 1998); Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc., 75 F.3d 1568, 1573 (Fed. Cir. 1996).

Blatchford does not teach or suggest that “the first index of refraction is approximately 2.1, the second index of refraction is approximately 2.0, the first absorption is approximately 1.2, and the second absorption is approximately 0.3,” as recited in claim 39 (emphasis added). Thus, Blatchford does not teach or suggest all of the claim limitations recited in claim 39. For at least these reasons, the Office Action fails to establish a *prima facie* case of obviousness and withdrawal of the rejection of claim 39 is respectfully requested.

Claims 40-45, 47 and 48 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Blatchford in view of Fukuda. The rejection is respectfully traversed.

As indicated above, Blatchford does not teach or suggest first and second anti-reflective coating layers. Blatchford discloses an anti-reflection coating 17 comprising three layers 13-15. As such, Blatchford does not teach or suggest a memory cell comprising “a structure on a substrate . . . [with] at least two active areas . . . a gate stack . . . a capacitor electrically coupled with one of the active areas; a first anti-reflective coating layer formed over the structure . . . a second anti-reflective coating layer formed on at least a portion of the first anti-reflective coating layer . . . and an insulating layer formed over the second anti-reflective coating layer,” as recited in claim 40. Fukuda is relied upon for disclosing components conventional for a memory cell and adds nothing to rectify the deficiencies of Blatchford.

In addition, a person of ordinary skill in the art would not have been motivated to combine Blatchford with Fukuda to arrive at the claimed invention. Courts have generally held that, to establish a *prima facie* case of obviousness, “[I]t is insufficient that the prior art disclosed the components of the patented device, either separately or used in other combinations; there must be some teaching, suggestion, or incentive to make the combination made by the inventor.” Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934, 15 U.S.P.Q.2d 1321, 1323 (Fed. Cir. 1990). This way, “the inquiry is not whether each element existed in the prior art, but whether the prior art made obvious the invention as a whole for which patentability is claimed.” Hartness Int’l, Inc. v. Simplimatic Engineering Co., 819 F.2d 1100, 1108, 2 U.S.P.Q.2d 1826, 1832 (Fed. Cir. 1987). Accordingly, a determination of obviousness “must involve more than indiscriminately combining prior art; a motivation or suggestion to combine must exist.” Pro-Mold & Tool Co., 75 F.3d at 1573.

In this case, there is no teaching, suggestion, motivation, or incentive to combine Blatchford with Fukuda. The crux of Blatchford is the formation of an anti-reflection coating between a substrate and a photoresist layer “to alleviate the problems caused by non-uniform reflection at the substrate surface during exposure of the photoresist layer.” (Abstract). In contrast, the crux of Fukuda is the creation of an offset between the cell array and the peripheral circuit region of a memory cell by providing an insulating film within the peripheral region and having a thickness equal to the height of each capacitor (Col. 1, line 66 through Col. 2, line 2). The only element in which Blatchford and Fukuda share is the substrate on which their respective structures are formed. A person of ordinary skill in the art would not have been motivated to combine Blatchford with Fukuda. The references are directed to entirely different problems.

Accordingly, the cited references do not teach or suggest claim 40. Claims 41-45 and 47-48 depend from claim 40 and are similarly allowable along with claim 40 for at least the reasons provided above. Withdrawal of the § 103(a) rejection for claims 40-45, 47 and 48 is respectfully solicited.

Claim 46 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Blatchford in view of Fukuda and Chen. The rejection is respectfully traversed.

Claim 46 depends from claim 40 and is allowable along with claim 40 for at least the reasons provided above. Specifically, Blatchford discloses an anti-reflection coating 17 comprising three separate layers 13-15. Blatchford and Fukuda do not teach or suggest a first anti-reflective coating layer and a second anti-reflective coating layer, or a memory cell, or a capacitor, or that an insulating layer is formed over the second anti-reflective coating layer as recited in claim 40.

Further, as discussed above, there is no motivation to combine Blatchford with Fukuda. Chen is relied upon for disclosing crown (container) capacitors and adds nothing to rectify the deficiencies of Blatchford and Fukuda. Withdrawal of the § 103(a) rejection for claim 46 is respectfully requested.

Claim 50 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Blatchford in view of Kim and Fukuda. The rejection is respectfully traversed.

As discussed previously, Blatchford does not teach or suggest first and second anti-reflective coating layers. Blatchford discloses an anti-reflection coating 17 comprising three layers 13-15. As such, Blatchford does not teach or suggest an integrated circuit comprising "at least one memory cell, the memory cell comprising: a structure . . . at least two active areas . . . a gate stack . . . a capacitor . . . an etch stop layer comprising: a first anti-reflective coating layer formed over the structure . . . a

second anti-reflective layer formed over and in contact with at least a portion of the first anti-reflective coating layer . . . [and] an insulating layer formed over the structure,” as recited in claim 50. Kim is relied upon for disclosing a method of making a capacitor where the antireflective layers are used as an etch stop layer and adds nothing to rectify the deficiencies of Blatchford.

In the Office Action dated October 17, 2003, and relied upon for the discussion of the § 103(a) rejection in the present Office Action, the Examiner stated that “Kim teaches a method for making a capacitor wherein antireflective layers are an etch stop layer (col. 11, 36-37).” (Office Action, pg. 4). Kim’s col. 11, lines 36-37, however, does not support this assertion.

Kim merely discloses that “the remaining moulding [sic] oxide layer 410 outside the openings 413a are selectively etched by using the first anti-reflection layer 404 as an etch-stop layer, thereby forming storage nodes 414a having HSG silicon nodules 416 on the inner surface thereof.” (Col. 11, lines 34-38). In other words, Kim does not teach or suggest Applicants’ claimed etch stop layer comprising a first anti-reflective coating layer and a second anti-reflective coating layer. Kim merely discloses using the first anti-reflection layer as an etch stop layer.

Moreover, Applicants note that, again, a person of ordinary skill in the art would not have been motivated to combine Blatchford with either Kim or Fukuda to arrive at the subject matter of a claim 50. The crux of Blatchford is the formation of an anti-reflection coating between a substrate and a photoresist layer “to alleviate the problems caused by non-uniform reflection at the substrate surface during exposure of the photoresist layer.” (Abstract). In contrast, the crux of Kim is the formation of a cylindrical capacitor (Abstract), while the crux of Fukuda is achieving an offset between the cell array and the peripheral circuit region of a memory cell by providing an

insulating film within the peripheral region and having a thickness equal to the height of each capacitor (Col. 1, lines 66-67; col. 2, lines 1-2). Other than the substrate on which their respective structures are formed, there is nothing that Blatchford, Kim and Fukuda have in common. For at least these reasons, withdrawal of the § 103(a) rejection for claim 50 is respectfully requested.

Claim 51 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Blatchford in view of Fukuda and Podlesny. The rejection is respectfully traversed.

As discussed previously, Blatchford does not teach or suggest first and second anti-reflective coating layers. Blatchford discloses an anti-reflection coating 17 comprising three layers 13-15. As such, Blatchford and Fukuda do not teach or suggest a computer system comprising "a processor; and a memory, the memory comprising at least one memory cell, the memory cell comprising: a structure . . . at least two active areas . . . a gate stack . . . a capacitor . . . a first anti-reflective coating layer formed over the structure . . . and a second anti-reflective coating layer formed in contact with the first anti-reflective coating layer," as recited in claim 51. Podlesny is relied upon for disclosing a memory cell array typically used as memory for a computer system, and adds nothing to rectify the deficiencies associated with Blatchford and Fukuda.

Moreover, Applicants also point out that one of ordinary skill in the art would not have been motivated to combine Blatchford with either Fukuda or Podlesny to arrive at the subject matter of claim 51. Blatchford addresses "problems caused by non-uniform reflection at the substrate surface during exposure of the photoresist layer" (abstract); whereas Fukuda addresses the creation of an offset between the cell array and the peripheral circuit region of a memory cell, while Podlesny addresses the formation of a cross-coupled sense amplifier as a storage element. The only element which all three references have in common is the substrate on which their respective

structures are formed. For at least these reasons, withdrawal of the § 103(a) rejection for claim 51 is respectfully requested.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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